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ABSTRACT

The purpose of this investigation was to learn if individual differences between teachers affect the degree to which they are receptive to inservice training. The specific objective was to determine if the conceptual systems teachers use to organize and act on elements in their own environments differentially affected their participation in and response to a training program in new methods of teaching. Results suggest that not only will teachers' conceptual systems influence what they learn from inservice efforts, but also how much they want to try to use what they have learned. (JD)

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Teachers' Belief Systems and Training Effects

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Abstract

The objective of this study was to ascertain whether teachers' conceptual systems influence the manner in which teachers choose to interpret and implement inputs from an inservice training program. The program was designed to offer teachers both the conceptual rationale for and alternative ideas to try to enhance their students' participation in classroom interaction. Teacher-student interaction data were examined to determine whether teachers of varying conceptual complexity had differentially incorporated the training ideas into their teaching styles. The results demonstrate that teachers' conceptual systems are related to their motivation to entertain and use alternative strategies.

Introduction

The purpose of this investigation was to learn if individual differences between teachers effect the degree to which teachers are receptive to inservice training activities. The specific objective was to ascertain whether the conceptual systems teachers use to organize and act on elements in their environments differentially affected their participation in and responsiveness to a program designed to train them to enhance their students' motivation. The major goal of the program was to help teachers understand the consequences of their actions and their students' actions so that the teachers would try to encourage student participation and involvement during instruction. An outcome of the program was that the trained teachers engaged their students in more motivationally enhancing interactions than did a comparable group of teachers who were not trained. A complete description of the design and effects of the training program has been reported previously (Cohen, Note 1). This paper expands upon these findings by examining differences within the group of trained teachers. In order to provide a conceptual focus for the present inquiry the theoretical frameworks which guided the larger research effort are discussed first as background. The rationale for the research was

based on two theories; personal causation, a theory of motivation posited by deCharms (1968), and conceptual systems, an information processing theory proposed initially by Harvey, Hunt and Schroder (1961).

Theoretical Background

Personal causation is a motivational variable which describes the experiences persons have when they are initiating, in control of, and responsible for their actions. The theory implies that "when a person feels he has personal causation, he feels that he has some control over his fate; he feels that he can originate at least some of his own behavior rather than have it entirely dictated from without" (Koenigs, Fiedler and deCharms, 1967, p.100). In shorthand terms, when persons experience personal causation, they feel like Origins. These experiences contrast, in the extreme, with feelings of being manipulated by external forces, like "Pawns". Research by deCharms and his colleagues (1972, 1976) has demonstrated that the students of teachers who encourage Origin experiences make greater achievement gains than those students whose teachers deny their students experiences of personal causation. The former students are motivated to attend school more frequently and to take greater responsibility for their actions in the classroom.

Conceptual systems theory was developed by Harvey, Hunt and Schroder (1961) to explain the concepts persons use to process information. A concept is defined as "the medium through which the individual establishes and maintains ties with the surrounding world" (p.11). Concepts serve as psychological filters and delineate "a system of ordering" (p.1) to guidethe manner in which persons differentiate, integrate, and act on information. Harvey (1964) has identified four such systems which are labeled conceptual, or belief, systems. The systems vary on a continuum of concreteness to abstractness and also define distinct personality types. Harvey and his colleagues have demonstrated that teachers' conceptual systems are differentially related to the classroom climates they create and to their students' classroom behavior and academic performance (1966, 1968, Note 2).

The link between personal causation and conceptual systems theory was proposed by Koenigs, Fiedler and deCharms (1977). They demonstrated that teacher-pupil interaction patterns are a function of teachers' belief systems. Compared to conceptually concrete teachers, conceptually complex teachers encourage their students to be active participants during instructional activities.

They also found that the students of conceptually complex teachers report that their teachers create classroom climates conducive to their experiencing personal causation. These results indicate that certain teachers naturally create Origin like environments for learning. DeCharms' earlier research (1972, 1976) has shown that training programs for teachers in personal causation can also effectively enhance students' motivational experiences. When considered together the findings of these research programs prompted two questions. First, can teachers learn how to interact with their students in ways that can increase their students' participation and consequent motivation? Second, do teachers' belief systems effect the manner in which they interpret and choose to implement the training inputs?

The first question was answered by Cohen (Note 1) who designed a program to offer teachers the conceptual rationale and alternative ideas so that they would want and try to encourage student participation in classroom interaction. The training activities, which were implemented during the course of one semester, involved many experiential techniques such as roleplaying and transcript analysis and critique. The data used to assess the program's effectiveness indicated that, as a group,

the trained teachers had learned the focal concepts and theories. Also, when compared to a comparable group of control teachers, observations of teacher-student interaction showed that the students of the trained teachers decreased the frequency with which they made irrelevant and disruptive initiations and increased their use of on task, constructive influence. The response to the second question, as to whether the training program had differential effects on the trained teachers as a function of their belief systems, provides the focus for the present investigation.

To understand why teachers of varying conceptual systems might react differently to similar training activities, the characteristics of persons representative of each belief system are described. Persons with System 4 orientations are the most complex. Harvey's theory would suggest that these teachers, in particular, would entertain the training ideas as potentially useful alternatives for action. Since Harvey and Felknor (1970) found that these persons were the recipients of a diversity of experiences as children, it can be inferred that, as adults, System 4 teachers continue to seek input from diverse sources. System 3 representatives validate their beliefs on the basis of peer norms. They are most concerned with maintaining interpersonal harmony in their

personal and professional lives. Their motives for contemplating change could be related to their desires either to conform with their colleagues or to impress the program staff.

At the extreme end of Harvey's scheme is the System 1 person who has a low tolerance for ambiguity and uncertainty. System 1 teachers rely upon their authoritarian role to establish rules and maintain classroom order. Compared to System 3 and 4 teachers, System 1 teachers would be more likely to resist the suggestion to analyze or change their style of teaching. This resistance would also be reflected in their attending fewer training sessions and initiating fewer meetings with project staff. Representatives of System 2 are as absolutistic as System 1's, but their functioning is unique in that they tend to distrust and reject input associated with established authorities or institutions. Such teachers would be likely to reject an invitation to participate in a training program before learning of its objectives. However, Harvey notes that the probability of such a person entering the teaching profession is low (Note 3, Note 4).

Method

Participants

Sixth grade teachers from a predominantly Black, low SES, inner city school district were invited to participate

in the study. The teachers were randomly assigned to a training or no training group. The subjects in the present inquiry were the 17 teachers who participated in the semester long training program. Four of these teachers had been assigned to teach different grade levels by the time the program began. Of the 17 teachers four were males and one was White. The mean number of years of teaching experience was 9.62 with a range from 2 to 32 years. The teachers' ages ranged from 26 to 52 years.

Measures and Procedures

Teachers' conceptual systems. The "This I Believe" test developed by Harvey (1964, 1965, 1966) was used as the measure of teachers' belief systems. The teachers were instructed "to write your opinions or beliefs about several topics. Please write at least two (2) sentences about each topic... . Be sure to write what you genuinely believe." The teachers responded for two minutes to each of 12 referents such as "This I believe about teaching" and "This I believe about success." The instrument was administered four months prior to the beginning of the training program as part of another research project.

The protocols were categorized by two raters trained by Harvey who assigned each protocol into one of the four belief systems or an admixture of two belief systems. The raters followed the classification scheme developed by Harvey, Hunt and Schroder (1961). The inter-rater agreement was 89%. Disagreements between raters were resolved before final system scores were assigned. The protocols were coded with identification numbers and scored after the training program was concluded by raters who did not know the teachers.

Teacher-student interaction. Using the Hit-Steer Observation System (Fiedler, 1975) observations of approximately an hour's length were conducted twice: before the training program began and after the final training session. The system was designed to measure teachers' and students' relative ability to have an effect on classroom activities by assessing the number of times a teacher or pupil tries to influence the other (or "hits") and whether the attempt had an effect; that is, whether the pupil or teacher was "steered" or not. Subcategories of teacher and pupil hits were developed (Cohen, Note 1, Note 5) and included in the observations. A teacher hit may either "Invite" student influence or "Impose" a structure upon the students compliant responses. A pupil hit is scored "Noise" if it

interrupts the ongoing flow of the lesson, "Attending" if it is a request for specific information, or "Expressing" if it is an attempt to incorporate hypotheses or new ideas into the focal task.

Approximately one fourth of the observations were conducted by two observers. The mean percentage of observer agreement was 88%. For 76% of the observations the teachers complied with a request to schedule observations during a social studies or science class. Classroom observation scores were standardized for 20 minute time intervals to correct for differences due to an incomplete hour of observation.

The training program. During the semester of the training program monthly meetings were held at the University. In addition, small group and individual sessions were scheduled for staff members to meet with participants in their classrooms. Attendance at each training session would indicate that a teacher had had approximately 14½ hours of training with staff members. Several teachers initiated more meetings; others chose to keep their participation at a minimal level. The amount of time individual teachers spent in training related activities ranged from 1 to 15½ hours over the semester. This was in addition to the two hours of formal observation in each classroom.

The training activities were designed to offer information and strategies to aid the teachers as they began to understand the manner in which their communications, the environment, and student actions could inhibit or enhance Origin experiences for their students. Continual opportunities were offered to practice translating the training components into "know how" so that the teachers would want to try to use them in their classrooms. Every effort was made to insure that the manner in which concepts and strategies were presented to the teachers was consistent with the ways in which the staff members were asking them to consider changing their behaviors. In practice this had two implications. First, the project staff were involved as participants in each activity. Second, teachers could not be required to attend meetings or be expected to change their behaviors. The author's responsibility, as program trainer, was to offer the teachers alternative ideas and strategies so that they would choose to pursue the goals of the program. The degree to which each teacher was involved in the program was his or her individual choice.

Results

The belief system scoring yielded the following distribution: six of the teachers were categorized as System 1; four received admixture scores of both Systems 3 and 1; five teachers were rated System 3; two scored System 4. Harvey (Note 6) also reports a predominance of System 1's and a proportionately smaller frequency of System 4 teachers.

Because of the small sample size, the belief system scores were divided into two groups to facilitate the analyses. Low and high belief system groups were formed by combining (a) the teachers who scored System 1 with those who had admixture scores of System 3 and 1 ($n = 10$) and (b) those who scored System 3 with those who were rated System 4 ($n = 7$).

Analyses were conducted using the belief system grouping as an independent variable. There were no differences on number of years of teaching experience between the two belief system groups. Since the concept of motivation comprised the theoretical framework of the study, the number of hours that each teacher spent in training related activities was used to operationalize the teachers' motivation to incorporate the training inputs. The low belief system teachers attended and initiated significantly fewer training sessions than the high belief system teachers ($t(15) = 2.23$, $p < .05$, one-tailed). The mean number of hours was 7.75 for the low belief system teachers and 11.86 for the high belief system teachers.

An examination of the Hit-Steer observational data revealed that the degree to which the teachers had incorporated the training inputs into their teaching styles also varied as a function of their belief systems. Table 1 presents the means for each category before and after the training program. The means show that compared to the low belief system teachers, that the high belief system group of teachers influenced their students less during the post-training observations and made greater changes in the types of communications they used; they made more inviting hits and fewer imposing hits. The pattern on the pupil hit subcategories differs. Both groups of teachers allowed their students to share more influence with them. The students of the low belief system teachers did this by asking a greater number of attending hits. The students of the high belief system teachers made a greater number of expressing influence attempts and decreased their use of noise influence attempts. $\underline{T}$ tests for independent groups were used to test the difference between the means of the two groups on the posttraining-pretraining change scores. The analysis on the noise pupil hit data was significant ($\underline{t}(15) = -4.118$, $\underline{p} < .01$, one-tailed) indicating that decreases in students' use of disruptive influence attempts were greater in the high belief system

teachers' classrooms. The magnitude of this association was substantial ($\omega^2 = .48$). This finding elucidates that found in the larger research effort (Cohen, Note 1) in which there were differences between trained and untrained teachers on the noise subcategory scores.

Discussion

The results could be interpreted as suggesting that teachers who attend fewer training sessions, learn less. This was the case, but the interpretation is not complete since it does not explain why teachers attend fewer sessions. The program was designed to offer teachers a means to increase their students' Origin experiences. The teachers were treated as Origins so that the choice to make a commitment to the training goals was their own. The data demonstrate that this choice was related to the manner in which teachers validate their beliefs. Change threatens low belief system teachers who confidently believe that the teaching style they have chosen is the best. They may also have regarded the training inputs as superfluous to their goals and their actions. Extensive field notes were kept by staff members during the course of the semester. Case studies of each of the 17 teachers further illuminated the patterns of these results.

The statistical generalizability of the results of this inquiry are limited for a number of reasons. The comparisons within the group of trained teachers were not planned a priori, nor were belief system ratings used to assign the teachers to the training or no training groups. The findings are more readily generalizable at a conceptual level. Practicing teachers are often required to attend inservice programs. The value of such sessions is sometimes questioned by the teachers in attendance and by administrators who can not see the program inputs transferring to the classrooms in their schools. The results of this research effort suggest that not only will teachers' conceptual systems influence what they learn from inservice efforts, but also how much they want to try to use what they have learned. Preservice training programs are equally susceptible to these concerns. A further question for this area of research is to learn how researchers and teacher trainers can guide less abstract teachers to make a difference for their students.

When placed in a larger perspective this investigation could be categorized as one more attempt to define effective teaching. Studies of the relationship between teacher personality variables and classroom process variables are abundant.

Reviews of the literature (Getzels and Jackson, 1963; McNeil and Popham, 1973; Rosenshine and Furst, 1973) often conclude by commenting on the inconsistent nature of the results. Programmatic efforts embedded within established theoretical frameworks reveal more consistency than research efforts with weakly conceived conceptual networks and offer a means to use the relationships in inservice and preservice training programs. Unfortunately, the results discussed here are often disguised by reports of average differences between trained and control groups.

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Table 1

Hit-Steer Observation Category Means for

Two Groups of Trained Teachers

Category	Low Belief System Teachers (n=10)		High Belief System Teachers (n=7)	
	Pretraining	Posttraining	Pretraining	Posttraining
Teacher Hits	60.13	50.68	65.35	51.13
Invite	4.15	6.71	2.95	6.82
Impose	55.98	43.97	62.40	44.31
Pupil Hits	16.20	22.38	15.58	18.32
Express	1.19	2.68	1.66	3.76
Attend	11.29	16.78	10.26	12.66
Noise	3.72	2.92	3.66	1.90